19-1553; Rev 0; 9/99

MAXIM

MAX3831/MAX3832 Evaluation Kits

Evaluate: MAX3831/MAX3832

General Description

The MAX3831/MAX3832 evaluation kits (EV kits) simplify evaluation of the MAX3831/MAX3832 2.488Gbps interconnect mux/demux ICs with clock generator. The EV kits require only a +3.3V single supply and include all the external components necessary to interface with 3.3V CML and LVDS logic. A parallel data generator or stimulus system can be used with an oscilloscope to evaluate the chip's complete functionality. A built-in system test (BIST) function allows a system high-speed test.

The MAX3831/MAX3832 EV kits contain an on-board clock and data recovery IC (MAX3876EHJ) that is used to generate 2.488Gbps clock and data inputs to the high-speed, CML-compatible serial-input ports.

Features

- **+3.3V Single Supply**
- **On-Board Clock and Data Recovery (CDR)**
- **Fully Assembled and Tested Surface-Mount Board**
- **Loss-of-Frame/Loss-of-Lock Monitors**

Component Suppliers

SUPPLIER	PHONE	FAX
Coilcraft	847-639-6400	847-639-1469
Sprague	207-324-4140	603-224-1430

Note: *Please indicate that you are using the MAX3831 or MAX3832 when contacting these component suppliers.*

Ordering Information

PART	TEMP. RANGE	IC PACKAGE
MAX3831EVKIT	0°C to +85°C	64 TQFP-EP*
MAX3832EVKIT	0°C to +85°C	64 TQFP-EP*

**Exposed paddle*

Component List

DESIGNATION	QTY	DESCRIPTION
C1	1	0.33µF ±10%, 16V min ceramic capacitor (0805)
C2–C5, C7–C14, C18, C22, C24–C28, C31–C33, C35, C36, C43–C47, C52–C56, C59–C62	38	0.1µF ±10%, 25V min ceramic capacitors (0603)
C23	1	1.0µF ±10%, 16V min ceramic capacitor (0805)
C29	1	33µF ±10%, 10V min tantalum cap Sprague 293D336X0016D2
C30	1	2.2µF ±10%, 10V min ceramic capacitor (1206)
R4, R60	2	390Ω ±5% resistors
R30, R33, R36, R39, R71	0	100Ω ±1% resistor (0603)— **not placed**
R28, R29	2	4.99kΩ ±1% resistors

DESIGNATION	QTY	DESCRIPTION
R61, R62	0	49.9Ω ±1% resistor (0603)— **not placed**
L1, L2, L4, L5, L6	5	56nH inductors Coilcraft 0805CS-560XKBC
D2, D3	2	LEDs
J1, J2, J33–J36	6	SMA connectors (PC mount)
J7, J8, J15–J32	20	SMB connectors (PC mount)
J38	1	2x12 header (0.1in centers)
JP3	1	3-pin header (0.1in centers)
JP4, JU2, JU3, JU7	4	2-pin headers (0.1in centers)
+3.3V, GND	2	Test points
U1	1	MAX3831UCB or MAX3832UCB 64-pin TQFP-EP
U2	1	MAX3876EHJ (32-pin TQFP)
U3	1	74HCT04
None	2	Shunts for JP3 and J38
None	1	MAX3831/MAX3832 PC board
None	1	MAX3831/MAX3832 data sheet

Quick Start

1) Apply 3.3V to the +3.3V pin. Connect power-supply ground to GND.
2) Short $\overline{TEST}$ to ground by tying pins 9 and 10 of J38 together. This places the chip into test mode, with PRBS data transmitted to the serial- and parallel-data output ports.
3) Reset the elastic store buffer by shorting pins 5 and 6 of J38.
4) Remove the jumper from pins 5 and 6 of J38; the $\overline{LOF}$ indicator (D3) should turn off.
5) Use a high-speed, 50Ω input oscilloscope to monitor PDO_± and SDO± for a proper eye diagram.

Detailed Description

Connecting LVDS Outputs to 50Ω Oscilloscope Inputs

To monitor an LVDS signal with a 50Ω oscilloscope probe, leave the coupling capacitors in series with the outputs. If you are observing only one output with a 50Ω probe, balance the circuit by connecting the other output with a 50Ω terminator to ground.

Connecting LVDS Outputs to High-Impedance Oscilloscope Inputs

To monitor an LVDS signal with a high-impedance oscilloscope probe, install a 100Ω differential load resistor between the complementary outputs (see R30, R33, R36, R39, R71 in the *Component List*).

Connecting CML Outputs to High-Impedance Oscilloscope Inputs

To monitor a CML signal with a high-impedance instrument, install 49.9Ω ±1% pull-up resistors (see R61 and R62 in the *Component List*) between the respective output lines and VCC.

Exposed-Paddle Package

The exposed-paddle (EP), 64-pin TQFP incorporates features that provide a very low thermal resistance path for heat removal from the IC. The paddle is electrical ground on the MAX3831/MAX3832 and should be soldered to the circuit board for proper thermal and electrical performance.

Table 1. Controls, Test Points, and LEDs

NAME	TYPE	PIN	DESCRIPTION
JU2	2-pin header	1, 2	RCLKI± common-mode bias connection. Shorting JU2 to ground sets V_{CM} = 0 (allows a single-ended RCLK± input).
JU3	2-pin header	1, 2	$\overline{LOF}$ test point (before buffering). **Do not short.**
JU7	2-pin header	1, 2	$\overline{LOF}$ test point (after buffering). **Do not short.**
JP4	2-pin header	1, 2	Loss-of-Lock ($\overline{LOL}$) test point. **Do not short.**
JP3	3-pin header	1, 2	Short to enable system-loopback input to CDR.
		2, 3	Short to enable serial-data input to CDR.
J38	24-pin header	1, 2	$\overline{TRIEN}$—short to enable tristate mode.
		3, 4	$\overline{PLBEN}$—short to enable parallel-system-loopback mode.
		5, 6	$\overline{RSETES}$—short to reset elastic store buffers.
		7, 8	$\overline{LBEN}$—short to enable serial-line-loopback mode.
		9, 10	$\overline{TEST}$—short to enable BIST mode.
		11, 12	N/A
		13, 14	N/A
		15, 16	$\overline{RSETFR}$—short to reset frame-sync circuitry.
		17, 18	$\overline{LOF}$ test point. **Do not short.**
		19, 20	N/A
		21, 22	N/A
		23, 24	N/A
D2	LED	1, 2	$\overline{LOL}$ indicator*
D3	LED	1, 2	$\overline{LOF}$ indicator

**$\overline{LOL}$ indicates serial data is not locked. Note that the $\overline{LOL}$ monitor is only valid when a data stream is present on the inputs of the MAX3876.*

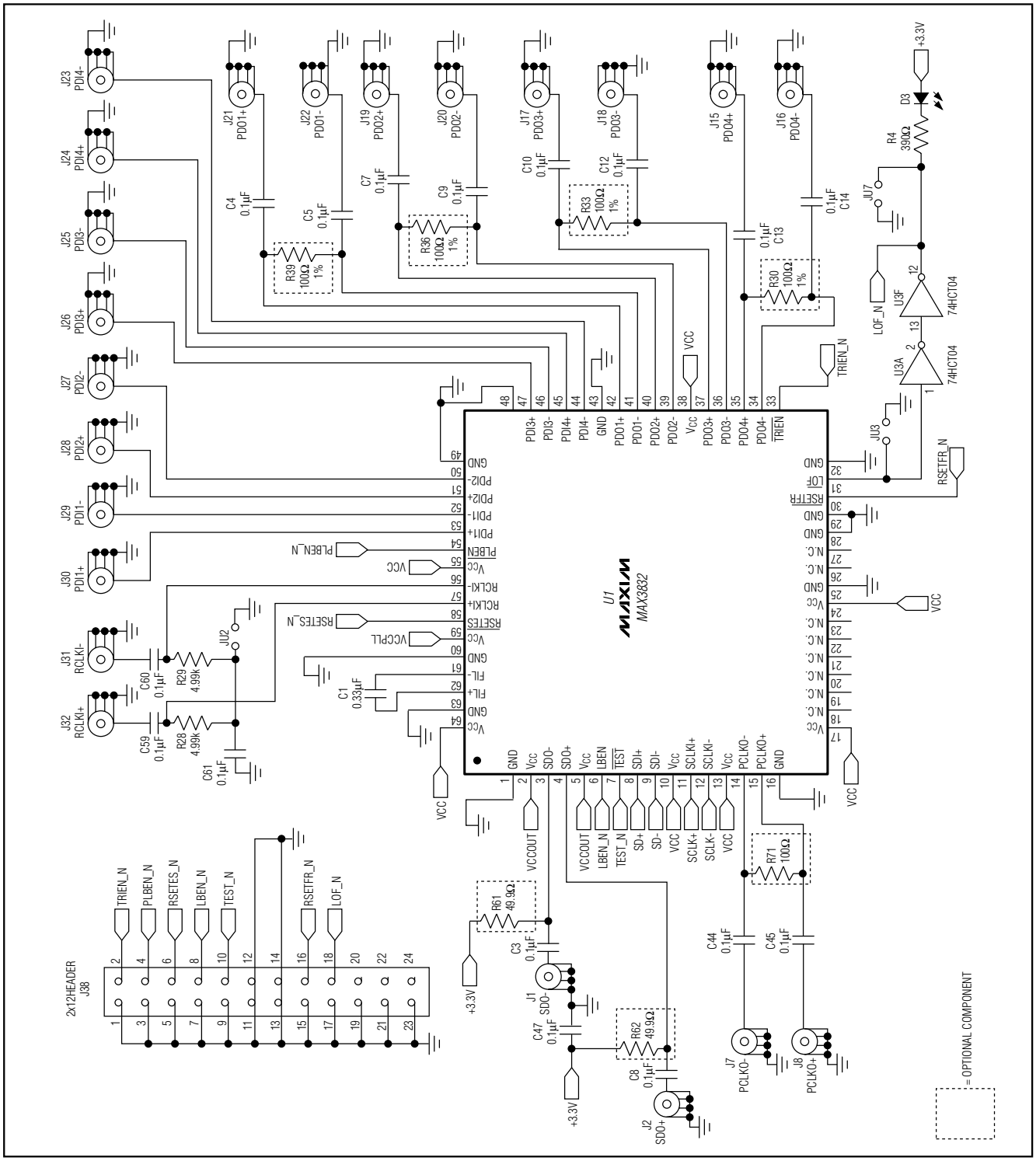

Figure 1. MAX3831/MAX3832 EV Kits Schematic

MAX3831/MAX3832 Evaluation Kits

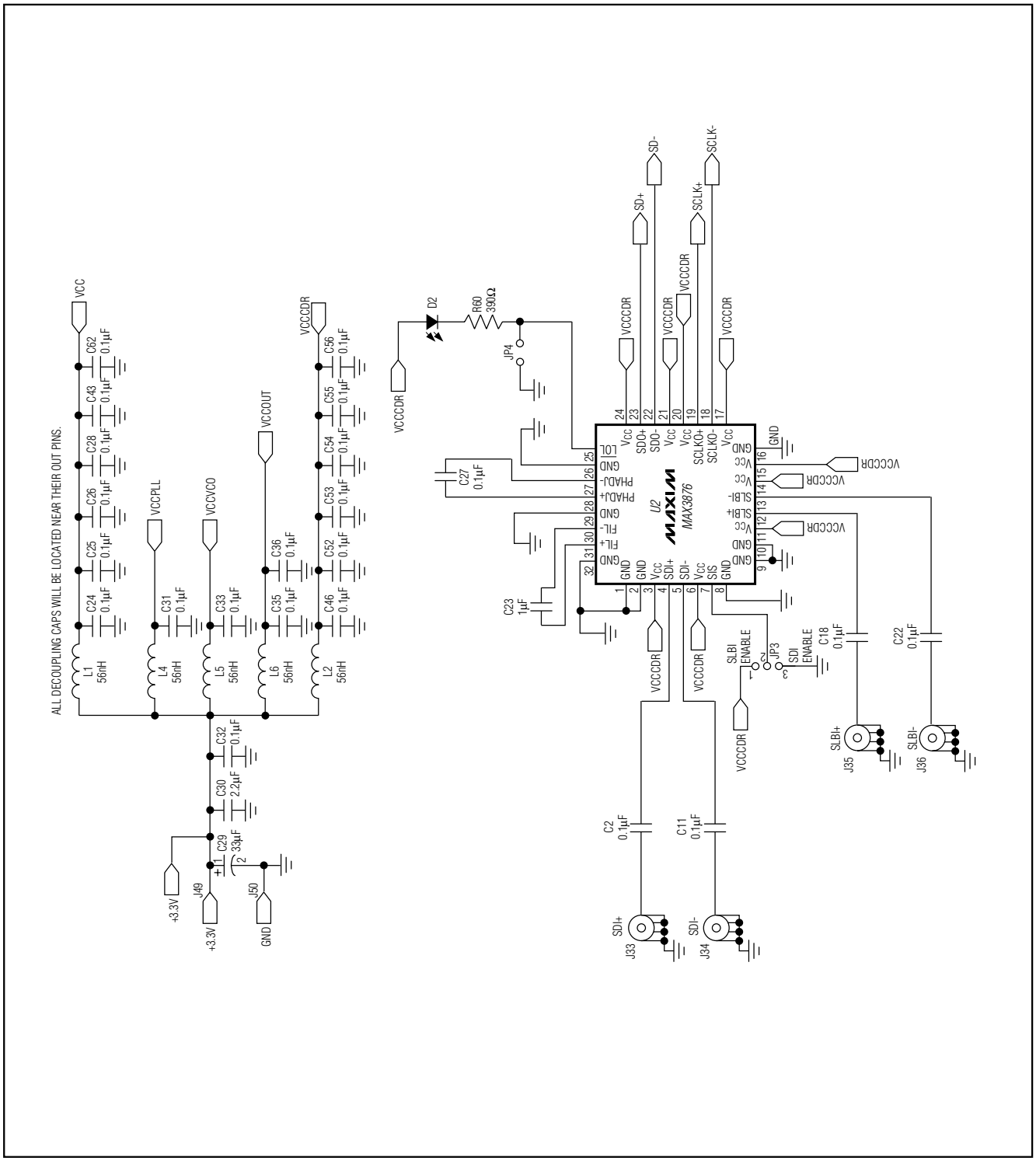

Figure 2. MAX3831/MAX3832 EV Kits Schematic (continued)

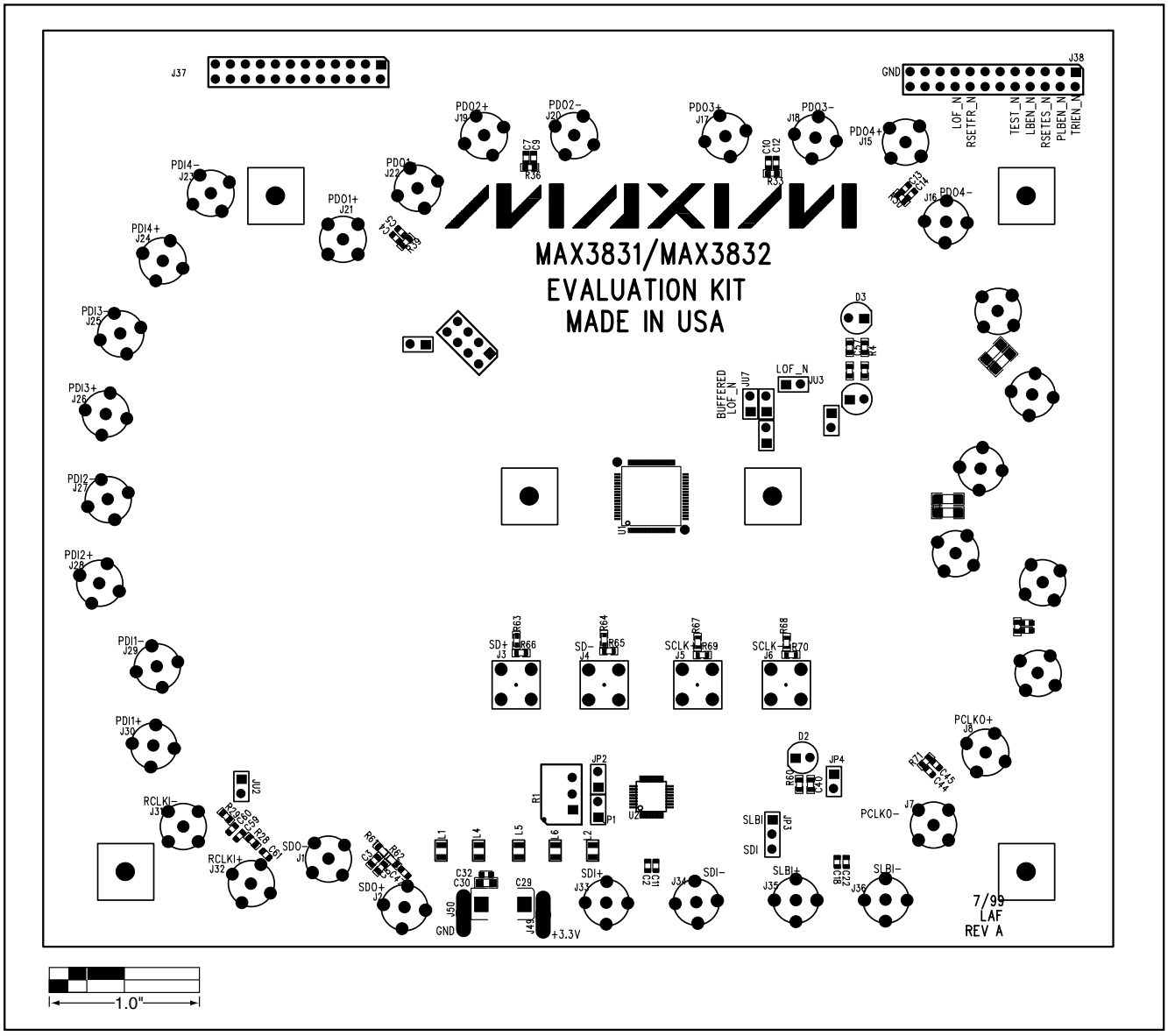

Figure 3. MAX3831/MAX3832 EV Kits Component Placement Guide—Component Side

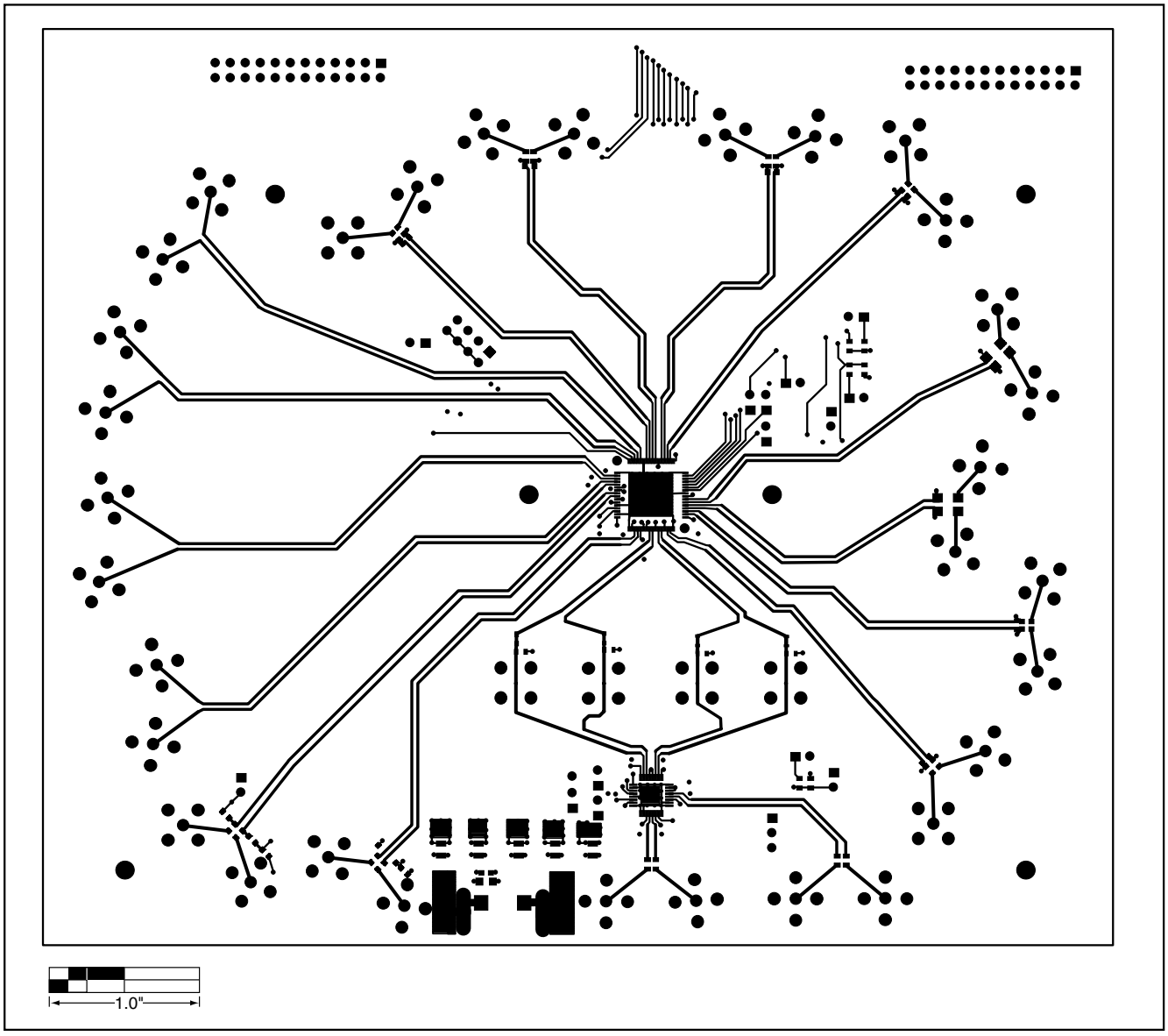

Figure 4. MAX3831/MAX3832 EV Kits PC Board Layout—Component Side

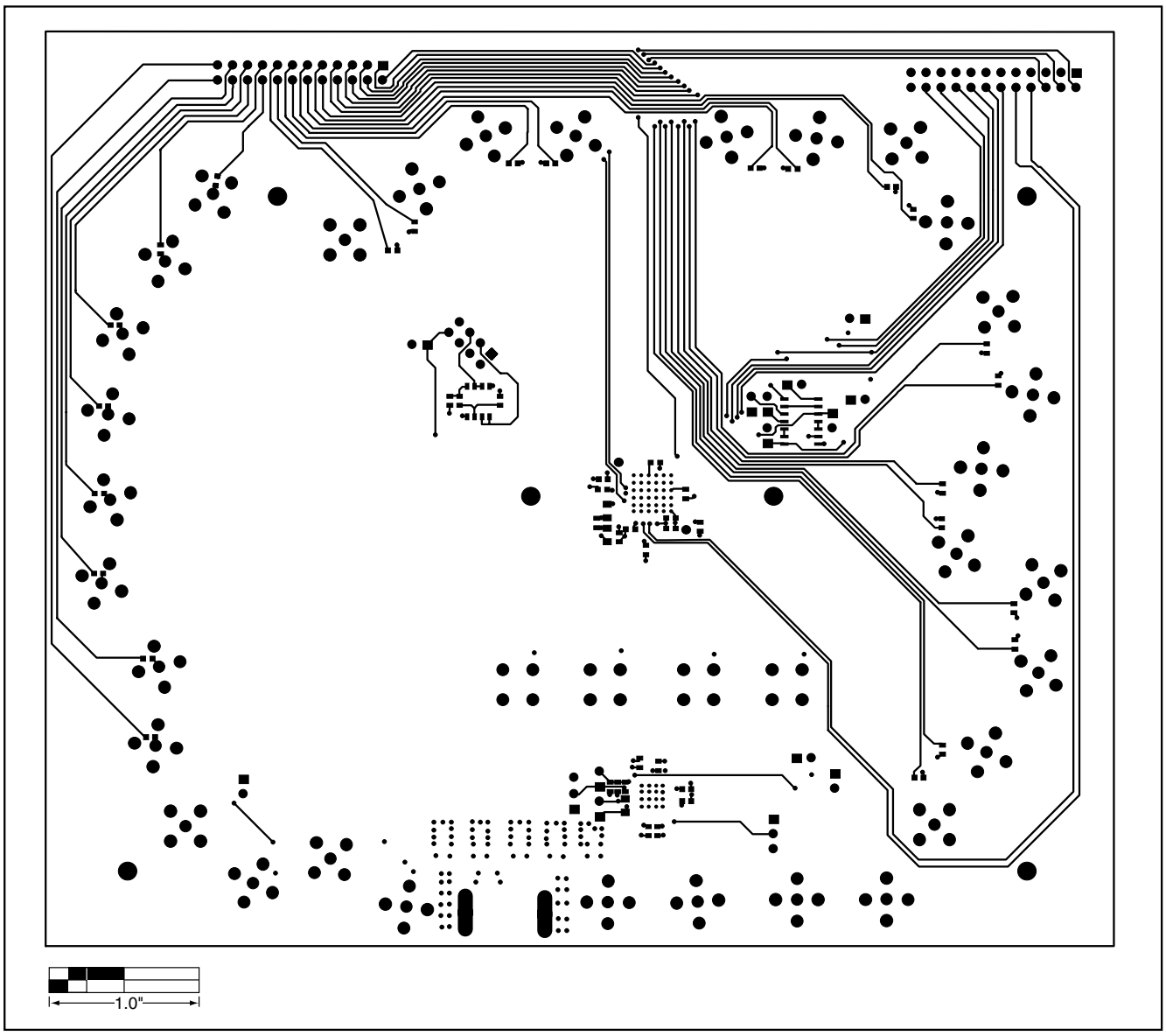

Figure 5. MAX3831/MAX3832 EV Kits PC Board Layout—Solder Side

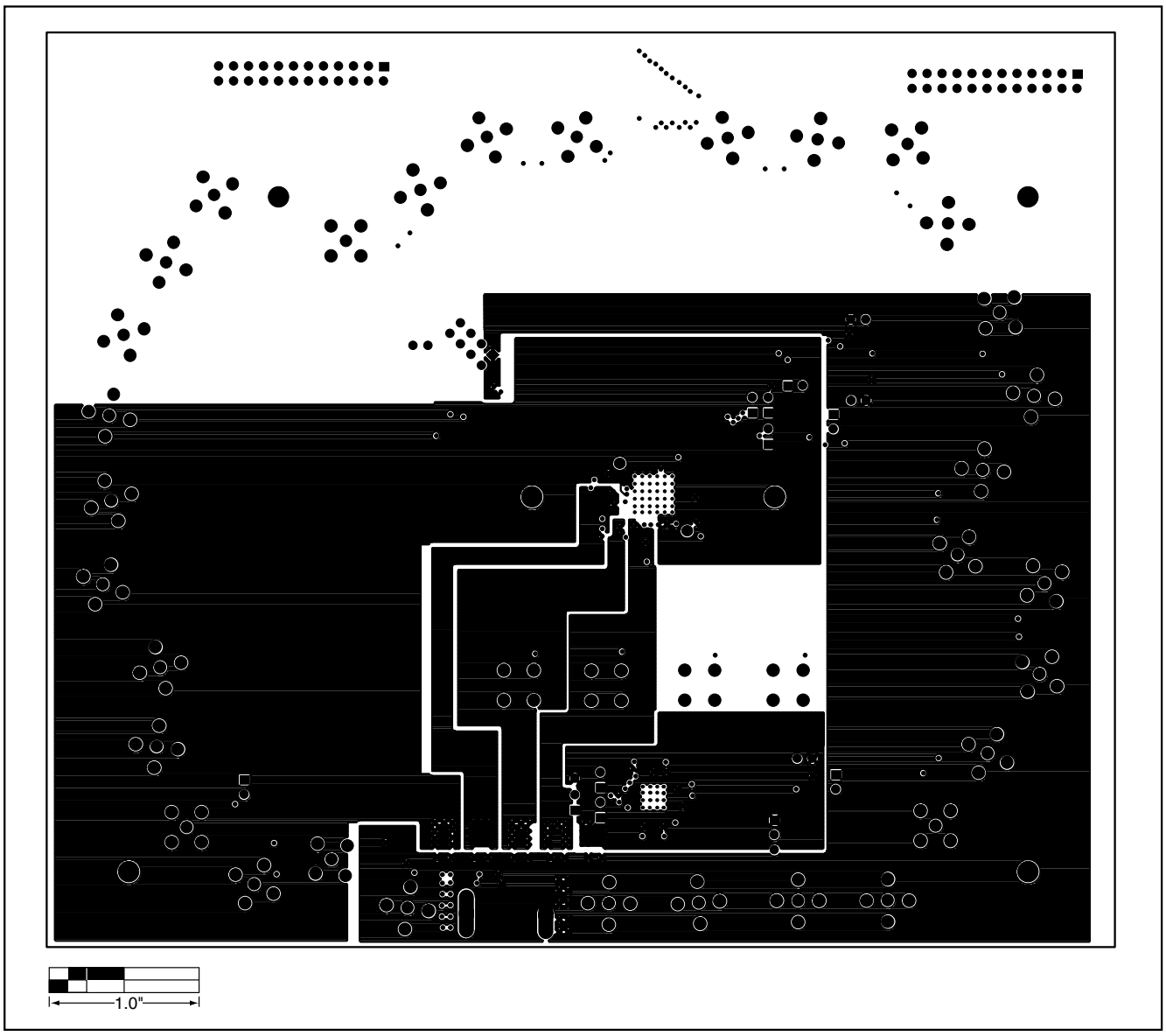

Figure 6. MAX3831/MAX3832 EV Kits PC Board Layout—Power Plane

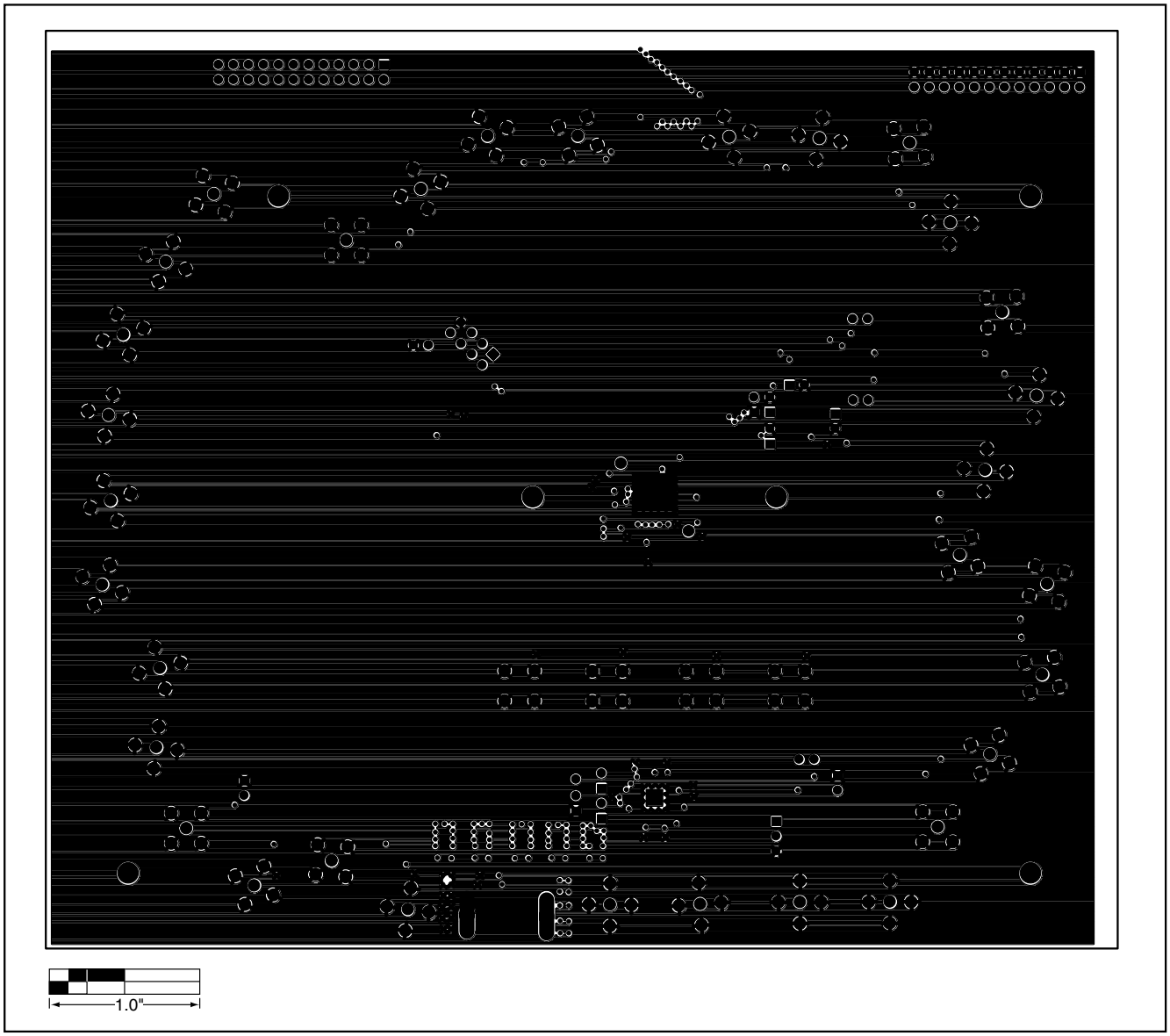

Figure 7. MAX3831/MAX3832 EV Kits PC Board Layout—Ground Plane

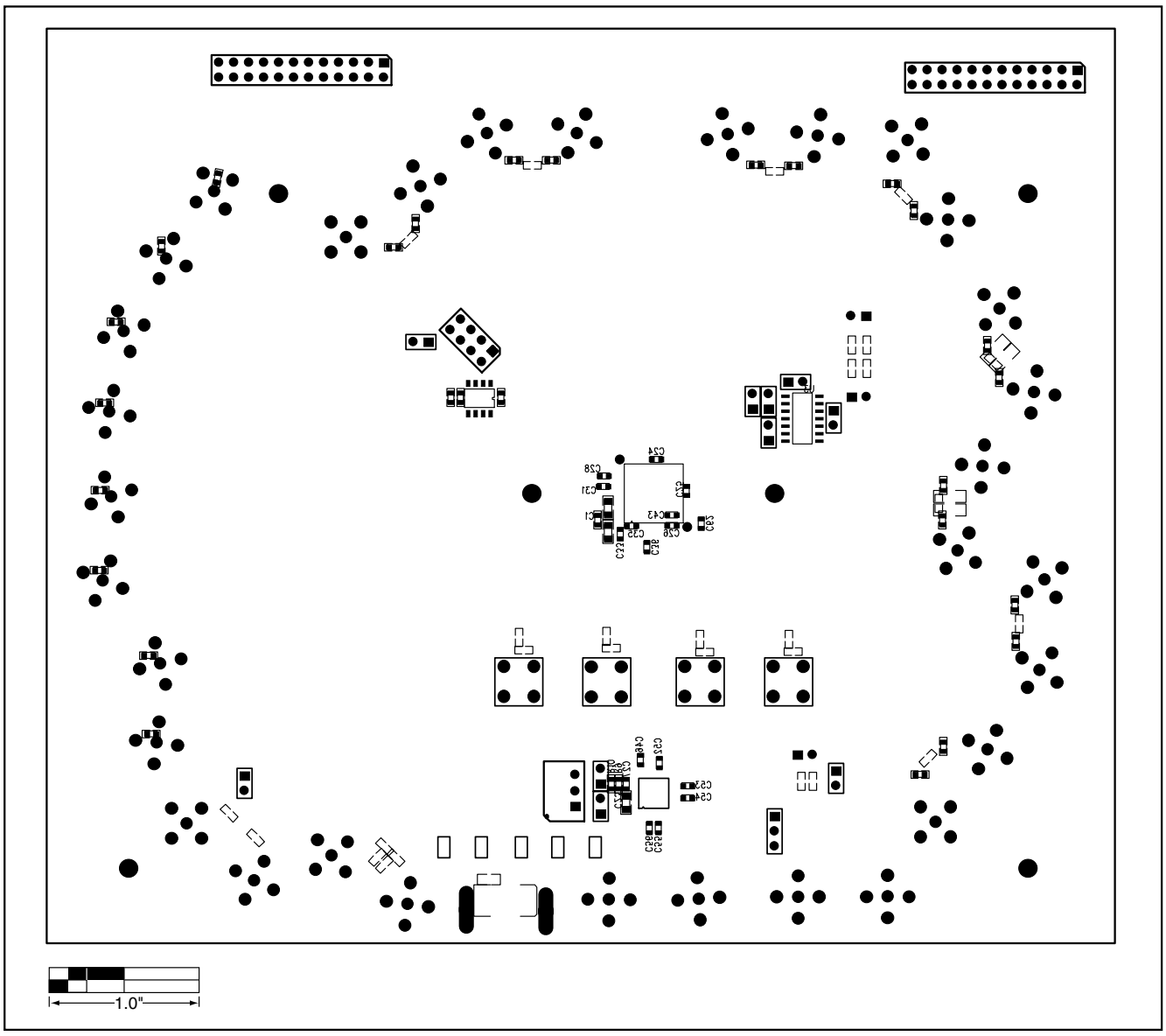

Figure 8. MAX3831/MAX3832 EV Kits Component Placement Guide—Solder Side